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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁶: C12N 15/11, C07K 14/525, A61K 38/00	A3	(11) International Publication Number: WO 99/12965 (43) International Publication Date: 18 March 1999 (18.03.99)
(21) International Application Number: PCT/US98/19191 (22) International Filing Date: 11 September 1998 (11.09.98) (30) Priority Data: 60/058,786 12 September 1997 (12.09.97) US 60/079,384 26 March 1998 (26.03.98) US (71) Applicant (for all designated States except US): BIOGEN, INC. [US/US]; 14 Cambridge Center, Cambridge, MA 02142 (US). (72) Inventor; and (75) Inventor/Applicant (for US only): TSCHOPP, Jurg [CH/CH]; Chemin des Fontannins 10, CH-1066 Epalinges (CH). (74) Agent: FLYNN, Kerry; Biogen, Inc., 14 Cambridge Center, Cambridge, MA 02142 (US).	(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 3 June 1999 (03.06.99)	
(54) Title: APRIL- A NOVEL PROTEIN WITH GROWTH EFFECTS (57) Abstract APRIL, a novel member of the tumor necrosis factor family (TNF), modified APRILs, and pharmaceutical compositions comprising them.		

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INTERNATIONAL SEARCH REPORT

International Application No.
PCT/US 98/19191

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12N15/11 C07K14/525 A61K38/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
T	HAHNE M. ET AL.: "APRIL, a new ligand of the tumor necrosis factor family, stimulates tumor cell growth" JOURNAL OF EXPERIMENTAL MEDICINE, vol. 188, no. 6, 21 September 1998, pages 1185-1190, XP002099001 US see the whole document ---	1-40
X,P	WO 97 33902 A (HUMAN GENOME SCIENCES INC.) 18 September 1997 see the whole document --- -/--	1-15, 17, 19-31, 34, 36-40

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
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Date of the actual completion of the international search

6 April 1999

Date of mailing of the international search report

22/04/1999

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/19191

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ADAMS M.D. ET AL.: "EST71242 T-cell lymphoma Homo sapiens cDNA 5' end" EMBL DATABASE, 18 April 1997, XP002099002 HEIDELBERG, DE Accession Number: AA361896 -----	2-5, 11, 12, 15, 22, 26
A	WO 96 40774 A (BIOGEN INC) 19 December 1996 -----	14, 16-19, 32-36

INTERNATIONAL SEARCH REPORT

international application No.

PCT/US 98/19191

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
Remark: Although claims 14, 16-19, 29-31, 34-40
are directed to a method of treatment of the human/animal
body, the search has been carried out and based on the alleged
effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such
an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

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4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is
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Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/US 98/19191

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9733902 A	18-09-1997	AU 5366596 A EP 0897390 A	01-10-1997 24-02-1999
WO 9640774 A	19-12-1996	AU 6166396 A	30-12-1996